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# WIRELESS ENGINEER

THE JOURNAL OF RADIO RESEARCH & PROGRESS

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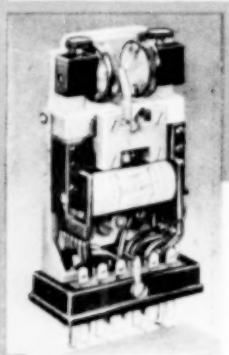

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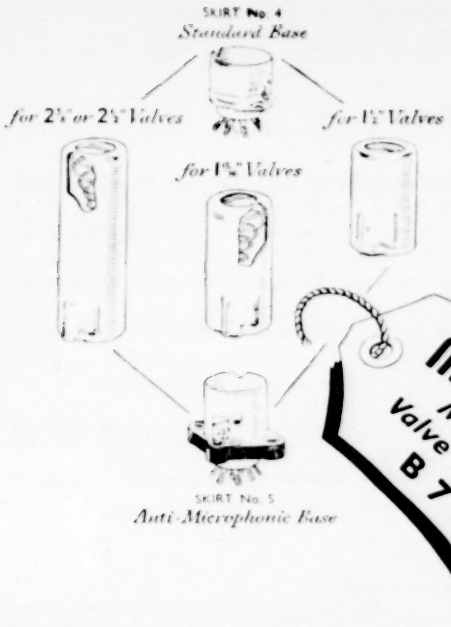


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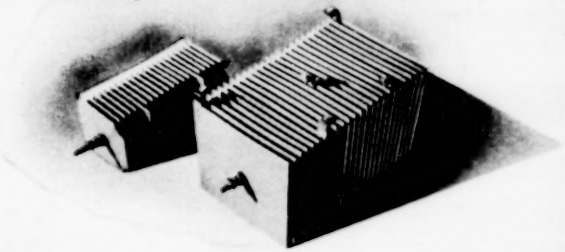

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# WIRELESS ENGINEER

Vol. 29 1952

## ABSTRACTS AND REFERENCES INDEX 1952

**This Index to Abstracts and References, published monthly in "Wireless Engineer" during 1952, is compiled on the same plan as for 1951. The following symbols are used: (A) abstract; (B) book review; (C) note of correction; (D) discussion. In the Author Index, a name followed by "and" is that of the first author of a jointly written paper, while the word "with" indicates that the name indexed is that of a second author.**

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## ERRATA

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|---|---|---|
| 86 | In title, for 'Amplitude-Controlled' read 'Volume-Control'. |
| 563 | For '534.321.91-14' read '534.321.9-14'. |
| 629 | Cancel 655.3. |
| 665 | For '656' read '665'. |
| 674 | For '551.510.535.621.3.087.4' read '551.510.535 : 621.3.087.4'. |
| 745 | For 'T. S. Eader' read 'H. H. Davids'. |
| 783 | In last line, for 'nterest' read 'interest'. |
| 869 | In line 9, for 'with' read 'within'. |
| 896 | For '534.232' read '621.395.61/62'. |
| 1063 | For 'G. K. Duff' read 'C. K. Duff'. |
| 1779 | For '1789' read '1779'. |
| 1941 | For '546.831.824-31' read '546.431.824-31'. |
| 2447 | For 'J. Deschanps' read 'J. Deschamps'. |
| 2570 | For 'G. Leibmann' read 'G. Liebmann'. |
| 2577 | For 'R. Stuart' read 'R. D. Stuart'. |
| 2578 | For 'R. Stuart' read 'R. D. Stuart'. |
| 2648 | For 'E. Kneil' read 'E. Kniel'. |
| 2690 | For '2455 of 1951' read '2455 of 1941'. |
| 2752 | In line 4, for '/2' read 'A/2'. |
| 2828 | For 'G. J. van den Berg' read 'C. G. van den Berg'. |
| 2993 | In title, for 'Norma' read 'Normal'. |
| 3027 | Insert 'H. Meinke' as author. |

### U.D.C. Changes

Aerial feeders 621.392 : 621.396.67
Photocell electron multipliers 621.383.27
Power supply 621.311.6 and subdivisions
*Q* meters 621.317.737
Synchrotrons 621.384.612
Thermistors 621.316.86 : 537.312.6
Transistors 621.314.7

## ABBREVIATIONS

**used in the Abstracts and Index**

| | | | |
|---|---|---|---|
| a.c. | = alternating current | i.c.w. } m.c.w. } | = modulated c.w. |
| d.c. | = direct current | s.w.* | = short wave |
| h.v. | = high voltage | u.s.w.* | = ultra short wave |
| l.v. | = low voltage | $\lambda$ | = wavelength |
| a.f. | = audio frequency | c.r. | = cathode ray |
| i.f. | = intermediate frequency | c.r.o. | = cathode ray oscilloscope |
| r.f. | = radio frequency, including:— | d.f. | = direction finding |
| l.f. | = low frequency, <300 kc/s | e.m. | = electromagnetic, *but* |
| m.f. | = medium frequency, 300–3000 kc/s | e.m.f. | = electromotive force |
| h.f. | = high frequency, 3–30 Mc/s | e.s. | = electrostatic |
| v.h.f. | = very high frequency, 30–300 Mc/s | a.f.c. | = automatic frequency control |
| u.h.f. | = ultra high frequency, >300 Mc/s | a.g.c. | = automatic gain control |
| a.m. | = amplitude modulation | a.ph.c. | = automatic phase control |
| f.m. | = frequency modulation | a.v.c. | = automatic volume control |
| p.m. | = pulse modulation, including:— | m.u.f. | = maximum usable frequency |
| p.a.m. | = pulse amplitude modulation | p.p.i. | = plan position indicator |
| p.c.m. | = pulse code modulation | s.s.b. | = single sideband |
| p.f.m. | = pulse frequency modulation | d.s.b. | = double sideband |
| p.ph.m. | = pulse phase modulation | s.w.r. | = standing wave ratio |
| p.p.m. | = pulse position modulation | v.f.o. | = variable frequency oscillator |
| p.w.m. | = pulse width modulation | R/T | = radiotelephony |
| ph.m. | = phase modulation | W/T | = wireless telegraphy |
| v.m. | = velocity modulation | TV | = television |
| c.w. | = continuous wave | | |

*No clearly defined limits

# LIST OF JOURNALS

A selection of the journals which are regularly scanned is given below, together with the addresses of their publishers or editorial offices and the abbreviations of their titles as used in the Abstracts and References. Applications for copies of any journal should be made to the addresses given.

The full title of each journal is given in bold type and is followed by the address, the abbreviated title being shown within brackets. In a few cases the nature of a journal is indicated, where neither the title nor the address shows it clearly.

**Acta Polytechnica,** Royal Swedish Academy of Engineering Sciences, Stockholm, Sweden. (*Acta polyt., Stockholm*)

**Acta physica austriaca,** Springer Verlag, Wien I, Mölkerbastei 5, Austria. (*Acta phys. austriaca*)

**Acustica,** S. Hirzel Verlag, Zürich, Switzerland. (*Acustica*)

**Advances in Physics,** Taylor & Francis Ltd, Red Lion Court, Fleet Street, London, E.C.4, England. (*Advances Phys.*)

**Alta Frequenza,** Associazione Elettrotecnica Italiana, Milano (202), Via S. Paolo 10, Italy. (*Alta Frequenza*)

**Annalen der Physik,** J. A. Barth, Leipzig C1, Salomonstrasse 18B, Germany. (*Ann. Phys., Lpz.*)

**Annales de Physique,** Masson & Cie, 120 Boulevard Saint-Germain, Paris 6e, France. (*Ann. Phys., Paris*)

**Annales de Radioélectricité,** 10 Rue Carducci, Paris 19e, France. (*Ann. Radioélect.*)

**Annales des Télécommunications,** 24 Rue Bertrand, Paris 7e, France. (*Ann. Télécommun.*)

**Annal[illegible]sica,** Istituto Nazionale di Geofisica, Citta universitaria, Rom[illegible]y. (*Ann. Geofis.*)

**Applied Scientific Research,** Martinus Nijhoff, Lange Voorhout 9, The Hague, Holland. (*Appl. sci. Res.*)

**Archiv der elektrischen Übertragung,** S. Hirzel Verlag, Stuttgart, Germany. (*Arch. elekt. Übertragung*)

**Archiv für Elektrotechnik,** Springer Verlag, Heidelberg, Neuenheimer Landstrasse 24, Germany. (*Arch. Elektrotech.*)

**Archiv für Meteorologie Geophysik und Bioklimatologie, Series A,** Springer Verlag, Wien I, Mölkerbastei 5, Austria. (*Arch. Met., Wien*)

**Archiv für technisches Messen,** R. Oldenbourg Verlag, München, Lotzbeckstrasse 29, Germany. (*Arch. tech. Messen*)

**Arkiv för Fysik,** published for Royal Swedish Academy of Sciences by Almqvist & Wiksells Boktryckeri A.B., Stockholm, Sweden. (*Ark. Fys.*)

**A.S.T.M. Bulletin,** 1916 Race Street, Philadelphia 3, Pa, U.S.A. (*ASTM Bull.*)

**Audio Engineering,** Radio Magazines Inc., 10 McGovern Avenue, Lancaster, Pa, U.S.A. (*Audio Engng*)

**Australian Journal of Applied Science,** Commonwealth Scientific and Industrial Research Organization, 314 Albert Street, East Melbourne C2, Australia. (*Aust. J. appl. Sci.*)

**Australian Journal of Scientific Research (Series A),** 314 Albert Street, East Melbourne C2, Australia. (*Aust. J. sci. Res., Ser. A*)

**A. W. A. Technical Review,** Amalgamated Wireless (Australasia) Ltd, Sydney, Australia. (*A.W.A. tech. Rev.*)

**B.B.C. Quarterly,** British Broadcasting Corporation, 35 Marylebone High Street, London, W.1, England. (*B.B.C. Quart.*)

**Beama Journal,** British Electrical and Allied Manufacturers' Association, 36 Kingsway, London, W.C.2, England. (*Beama J.*)

**Bell Laboratories Record,** 463 West Street, New York 14, N.Y., U.S.A. (*Bell. Lab. Rec.*)

**Bell System Technical Journal,** American Telephone and Telegraph Company, 195 Broadway, New York 7, N.Y., U.S.A. (*Bell Syst. tech. J.*)

**British Journal of Applied Physics,** 47 Belgrave Square, London, S.W.1, England. (*Brit. J. appl. Phys.*)

**Brown Boveri Review,** A. Fratcke A.G., Bern, Switzerland. (*Brown Boveri Rev.*)

**Bulletin de l'Académie des Sciences de l'U.R.S.S.,** (*a*) série physique, (*b*) série géophysique, (*c*) classe sciences techniques, Academy of Sciences, Moscow, U.S.S.R. (In Russian.) (*Bull. Acad. Sci. U.R.S.S., (a) sér. phys., (b) sér. geophys. (c) tech. Sci.*)

**Bulletin of the American Meteorological Society,** Executive Secretary, 3 Joy Street, Boston 8, Mass., U.S.A. (*Bull. Amer. met. Soc.*)

**Bulletin de l'Association suisse des Électriciens,** S.A. Fachschriften-Verlag & Buchdruckerei, Stauffacherquai 36-40, Zürich 4, Switzerland. (*Bull. schweiz. elektrotech. Ver.*)

**Bulletin de la Société française des Électriciens,** 8-14 Avenue Pierre Larousse, Malakoff (Seine), France. (*Bull. Soc. franç. Élect.*)

**Bulletin technique de la Suisse romande,** F. Rouge & Cie, Lausanne, Switzerland. (*Bull. tech. Suisse rom.*)

**Câbles & Transmission,** Sotelec, 16 Rue de la Baume, Paris 8e, France. (*Câbles & Transm.*)

**Canadian Journal of Physics,** National Research Council, Ottawa, Canada. (*Canad. J. Phys.*)

**Chalmers tekniska Högskolas Handlingar,** N. J. Gumperts Bokhandel, Göteborg, Sweden. (*Chalmers tek. Högsk. Handl.*)

**Communication News,** Philips Telecommunications Industries, Hilversum, Holland. (*Commun. News*)

**Communications on Pure and Applied Mathematics,** Interscience Publishers Inc., 250 Fifth Avenue, New York 1, N.Y., U.S.A. (*Commun. pure appl. Math.*)

**Comptes Rendus Hebdomadaires des Séances de l'Académie des Sciences,** Gauthier-Villars, Quai des Grands Augustins 55, Paris, France. (*C. R. Acad. Sci., Paris*)

**Comptes Rendus (Doklady) de l'Académie des Sciences de l'U.R.S.S.,** Academy of Sciences, Moscow, U.S.S.R. (In Russian.) (*C. R. Acad. Sci. U.R.S.S.*)

**Deutsche Elektrotechnik,** Verlag-Technik G.m.b.H., Berlin N.W.7, Unter den Linden 12, Germany. (*Deutsche Elektrotech.*)

**Electrical Communication,** International Telephone and Telegraph Corporation, 67 Broad Street, New York 4, N.Y., U.S.A. (*Elect. Commun.*)

**Electrical Engineering,** Journal of the American Institute of Electrical Engineers, 500 Fifth Avenue, New York 36, N.Y., U.S.A. (*Elect. Engng, N.Y.*)

**Electrical Manufacturing,** 1250 Sixth Avenue, New York 20, N.Y., U.S.A. (*Elect. Mfg*)

**Electrical Times,** Sardinia House, Sardinia Street, London, W.C.2, England. (*Elect. Times*)

**Electrician,** Bouverie House, 154 Fleet Street, London, E.C.4, England. (*Electrician*)

**Electronic Application Bulletin,** N.V. Philips Gloeilampenfabrieken, Eindhoven, Holland. (*Electronic Applic. Bull.*)

**Electronic Engineering,** 28 Essex Street, London, W.C.2, England. (*Electronic Engng*)

**Electronics,** 99-129 North Broadway, Albany 1, N.Y., U.S.A. (*Electronics*)

**Elektrotechnik,** See Deutsche Elektrotechnik.

**Elektrotechnik und Maschinenbau,** Journal of the Elektrotechnischer Verein Österreichs, Springer Verlag, Wien I, Mölkerbastei 5, Austria. (*Elektrotech. u. Maschinenb.*)

**Elektrotechnische Zeitschrift,** Edition A & B, VDE-Verlag G.m.b.H., Wuppertal-Elberfeld, Brillenstrasse 99, Germany. (*Elektrotech. Z.*)

**Endeavour,** Imperial Chemical Industries, Nobel House, Buckingham Gate, London, S.W.1, England. (*Endeavour*)

**Engineer,** 28 Essex Street, London, W.C.2, England. (*Engineer, Lond.*)

**Engineering,** 35 & 36 Bedford Street, London, W.C.2, England. (*Engineering, Lond.*)

**Ericsson Review,** Stockholm 32, Sweden. (*Ericsson Rev.*)

**Fernmeldetechnische Zeitschrift,** Vieweg & Sohn, Braunschweig, Burgplatz 1, Germany. (*Fernmeldetech. Z.*)

**FM-TV.** See Radio Communication.

**Frequenz,** Schiele & Schön, Berlin S.W.29, Boppstrasse 10, Germany. (*Frequenz*)

**Funk und Ton,** Verlag für Radio-Foto-Kinotechnik G.m.b.H., Berlin-Borsigwalde, Eichborndamm 141-167, Germany. (*Funk u. Ton*)

**G.E.C. Journal,** General Electric Company, Magnet House, Kingsway, London, W.C.2, England. (*G.E.C. J.*)

**G.E.C. Telecommunications,** General Electric Company Ltd, Coventry, England. (*G.E.C. Telecommun.*)

**General Electric Review,** General Electric Company, 1 River Road, Schenectady 5, N.Y., U.S.A. (*Gen. elect. Rev.*)

**General Radio Experimenter,** General Radio Company, 275 Massachusetts Avenue, Cambridge 39, Mass., U.S.A. (*Gen. Radio Exp.*)

**Helvetica Physica Acta,** Journal of the Société suisse de Physique, Editions Birkhäuser, Bâle, Switzerland. (*Helv. phys. Acta*)

**HF,** 55 Rue Defacqz, Brussels, Belgium. (*HF, Brussels*)

**Indian Journal of Physics,** (and Proceedings of the Indian Association for the Cultivation of Science), 210 Bowbazer Street, Calcutta, India. (*Indian J. Phys.*)

**Journal of the Acoustical Society of America,** American Institute of Physics, 57 East 55th Street, New York 22, N.Y., U.S.A. (*J. acoust. Soc. Amer.*)

**Journal of Applied Physics,** American Institute of Physics, 57 East 55th Street, New York 22, N.Y., U.S.A. (*J. appl. Phys.*)

**Journal of Atmospheric and Terrestrial Physics,** Pergamon Press Ltd, 2-5 Studio Place, Kinnerton Street, London, S.W.1, England. (*J. atmos. terr. Phys.*)

**Journal of the British Institution of Radio Engineers,** 9 Bedford Square, London, W.C.1, England. (*J. Brit. Instn Radio Engrs*)

**Journal of the Franklin Institute,** Prince and Lemon Streets, Lancaster, Pa, U.S.A. (*J. Franklin Inst.*)

**Journal of Geophysical Research,** Johns Hopkins Press, Baltimore 18, Maryland, U.S.A. (*J. geophys. Res.*)

**Journal of the Indian Institute of Science,** Indian Institute of Science, Bangalore 3, India. (*J. Indian Inst. Sci.*)

**Journal of the Institution of Engineers, Australia,** Science House, Gloucester & Essex Streets, Sydney, Australia. (*J. Instn Engrs, Aust.*)

**Journal of Mathematics and Physics,** Massachusetts Institute of Technology, Cambridge 39, Mass., U.S.A. (*J. Math. Phys.*)

**Journal of the Institute of Navigation,** 50 Albemarle Street, London W.1, England. (*J. Inst. Nav.*)

**Journal of the Optical Society of America**, American Institute of Physics, 57 East 55th Street, New York 22, N.Y., U.S.A. (*J. opt. Soc. Amer.*)

**Journal de Physique et le Radium**, 12 Place Henri Bergson, Paris 8e, France. (*J. Phys. Radium.*)

**Journal of Research of the National Bureau of Standards**, U.S. Government Printing Office, Washington, D.C., U.S.A. (*J. Res. nat. Bur. Stand.*)

**Journal of Scientific Instruments**, 47 Belgrave Square, London, S.W.1, England. (*J. sci. Instrum.*)

**Journal of the Society of Glass Technology**, Secretary, J. H. Partridge, Elmfield, Northumberland Road, Sheffield 10, England. (*J. Soc. Glass Tech.*)

**Journal of the Society of Motion Picture and Television Engineers**, 40 West 40th Street, New York 18, N.Y., U.S.A. (*J. Soc. Mot. Pict. Televis. Engrs.*)

**Journal of the Television Society**, 164 Shaftesbury Avenue, London, W.C.2, England. (*J. Televis. Soc.*)

**Marconi Review**, Marconi House, Chelmsford, England. (*Marconi Rev.*)

**Materials and Methods**, Reinhold Publishing Corporation, 330 West 42nd Street, New York 36, N.Y., U.S.A. (*Mater. & Meth.*)

**Metal Industry**, Louis Cassier Company Ltd, Dorset House, Stamford Street, London, S.E.1, England. (*Metal Ind., Lond.*)

**Metal Progress**, American Society for Metals, 7301 Euclid Avenue, Cleveland 3, Ohio, U.S.A. (*Metal Progr.*)

**Metal Treatment**, 49 Wellington Street, London, W.C.2, England. (*Metal Treatm.*)

**Metallurgia**, Kennedy Press Ltd, 21 Bedford Street, London, W.C.2, England. (*Metallurgia, Manchr.*)

**Meteorological Magazine**, Her Majesty's Stationery Office, York House, Kingsway, London, W.C.2, England. (*Met. Mag., Lond.*)

**Microtecnic**, Lausanne, Switzerland. (*Microtecnic*)

**Modern Plastics**, 122 East 42nd Street, New York 17, N.Y., U.S.A. (*Mod. Plast.*)

**Monthly Notices of the Royal Astronomical Society**, Burlington House, London, W.1, England. (*Mon. Not. R. astr. Soc.*)

**Nachrichten Technik**, Verlag Technik, Berlin N.W.7, Unter den Linden 12, Germany. (*Nachr Tech.*)

**Nature**, Macmillan & Co. Ltd, St. Martin's Street, London, W.C.2, England. (*Nature, Lond.*)

**Naturwissenschaften**, Springer Verlag, Heidelberg, Neuenheimer Landstrasse 24, Germany. (*Naturwissenschaften*)

**Nucleonics**, 212 East York Street, York, Pa, U.S.A. (*Nucleonics*)

**Observatory**, Royal Observatory, Herstmonceux Castle, Hailsham, Sussex, England. (*Observatory*)

**Onde électrique**, 40 Rue de Seine, Paris 6e, France. (*Onde élect.*)

**Optik**, Wissenschaftliche Verlagsgesellschaft, Stuttgart 1, Postfach 40, Germany. (*Optik, Stuttgart*)

**Osterreichische Zeitschrift für Telegraphen- Telephon- Funk- und Fernsehtechnik**, Springer Verlag, Wien 1, Mölkerbastei 5, Austria. (*Öst. Z. Telegr. Teleph. Funk Fernsehtech.*)

**Philips Research Reports**, N.V. Philips Gloeilampenfabrieken, Eindhoven, Holland. (*Philips Res. Rep.*)

**Philips Technical Review**, (as for Philips Research Reports). (*Philips tech. Rev.*)

**Philosophical Magazine**, Taylor & Francis Ltd, Red Lion Court, Fleet Street, London, E.C.4, England. (*Phil. Mag.*)

**Philosophical Transactions of the Royal Society**, Cambridge University Press, Bentley House, London N.W.1, England. (*Phil. Trans.*)

**Physica**, Journal of the Dutch Physical Society, Martinus Nijhoff, Lange Voorhout 9, The Hague, Holland. (*Physica*)

**Physical Review**, 57 East 55th Street, New York 22, N.Y., U.S.A. (*Phys. Rev.*)

**Post Office Electrical Engineers' Journal**, Engineer-in-Chief's Office, Alder House, Aldersgate Street, London, E.C.1, England. (*P.O. elect. Engrs' J.*)

**Poste e Telecomunicazioni**, Ministero P.T., Viale Aventino 19, Roma, Italy. (*Poste e Telecommunicazioni*)

**Proceedings of the Cambridge Philosophical Society**, Cambridge University Press, Bentley House, London, N.W.1, England. (*Proc. Camb. phil. Soc.*)

**Proceedings of the Institute of Radio Engineers**, 1 East 79th Street, New York 21, N.Y., U.S.A. (*Proc. Inst. Radio Engrs*)

**Proceedings of the Institution of Electrical Engineers**, Parts I, II, III & IV, Savoy Place, London, W.C.2, England. (*Proc. Instn elect. Engrs*)

**Proceedings of the Institution of Radio Engineers, Australia**, Science House, Gloucester Street, Sydney, N.S.W., Australia. (*Proc. Instn Radio Engrs. Aust.*)

**Proceedings of the National Electronics Conference**, 852 East 83rd Street, Chicago 19, Illinois, U.S.A. (*Proc. nat. Electronics Conf., Chicago*)

**Proceedings of the Physical Society**, 1 Lowther Gardens, Prince Consort Road, London, S.W.7, England. (*Proc. phys. Soc.*)

**Proceedings of the Radio Club of America**, 11 West 42nd Street, New York, N.Y., U.S.A. (*Proc. Radio Cl. Amer.*)

**Proceedings of the Royal Society**, Cambridge University Press, Bentley House, London, N.W.1, England. (*Proc. roy. Soc.*)

**QST**, American Radio Relay League Inc., 38 La Salle Road, West Hartford 7, Conn., U.S.A. (*QST*)

**Quarterly of Applied Mathematics**, Brown University, Providence 12, R.I., U.S.A. (*Quart. appl. Math.*)

**Quarterly Journal of the Royal Meteorological Society**, 49 Cromwell Road, London, S.W.7, England. (*Quart. J. R. met. Soc.*)

**Radio Communication**, 264 Main Street, Great Barrington, Mass., U.S.A. (*Radio Commun.*)

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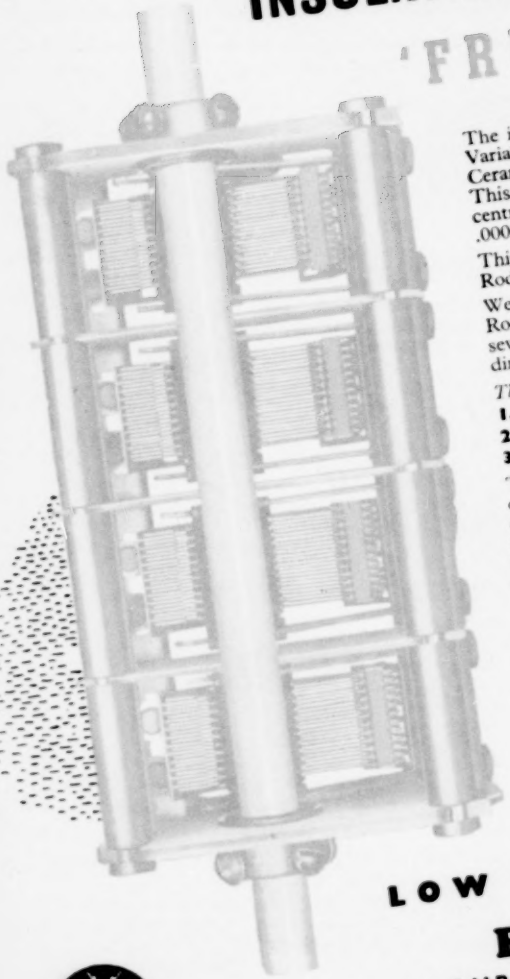

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